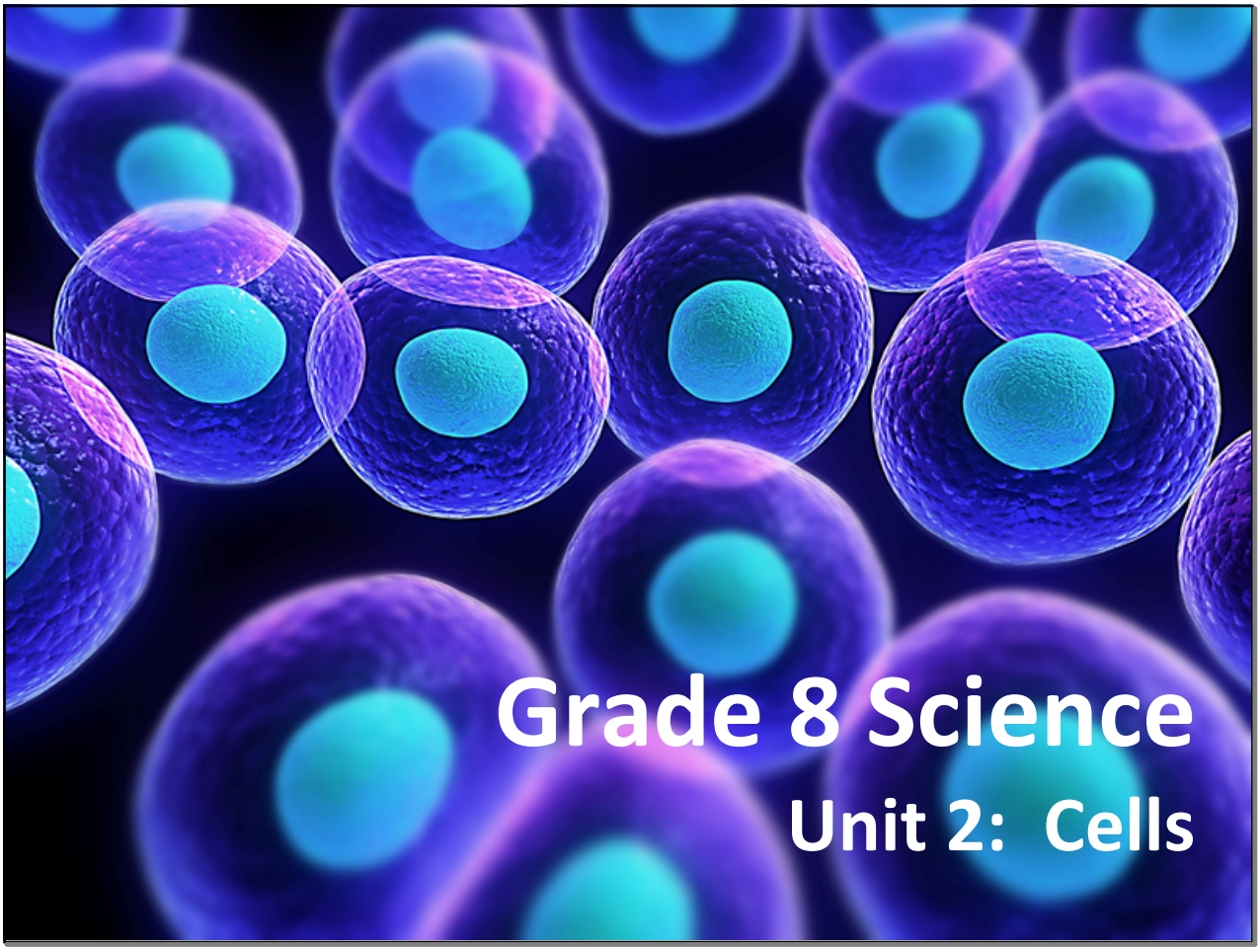


Cells End of Unit Review

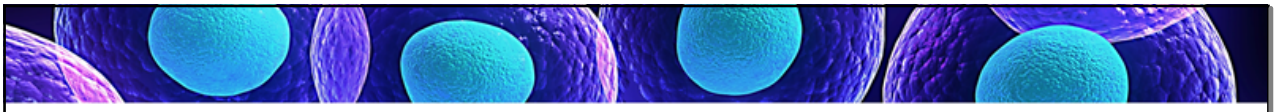
Today we will take up the practise test that you were given last week. Pay close attention as we go through each question. If you do not understand an answer, ask a question, or put a star beside it so you can ask me prior to the test. The test you will write next week covers the same topics, however it is not the same. If you understand everything on this review, you should be fine for the test.

I expect that you:

- pay attention while we take it up
- make necessary corrections on your review
- come prepared to write the test next week

Before I begin, please take out your review, a red pen, and any other supplies you feel you may need to mark your test.

If you are not complete, please take a clipboard and go sit in the hall. You can work on it there as we discuss the answers.



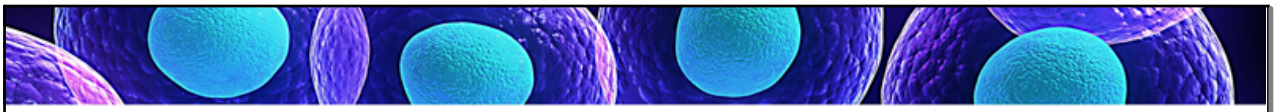
1. What nine characteristics do all living things share? Highlight or underline one key word for each characteristic.

   All living things…
   - Are composed of Cells
   - Require Energy
   - Grow or Repair itself
   - Reproduce
   - Need to Breathe
   - Are capable of Movement
   - Respond to their Environment
   - Produce Waste
   - Have a Life Span

2. Why is the sun not considered to be alive, why might some people think it is?

   In order to be alive, it must meet all nine criteria from question 1. The sun is not composed of cells, nor does it reproduce (unless sunlight is considered baby suns).

   Some people may argue the sun to be alive, as it does match many of the criteria. A sun can grow (change in stage), it has a life span, it has movement (solar flares), etc.



3. State the six postulates of the cell theory.

   All living things are composed of one or more cells.
   The cell is the basic unit of life.
   All cells come from pre-existing cells.
   Energy flow occurs within cells.
   Hereditary information (DNA) is contained within cells.
   All cells have the same basic chemical composition.

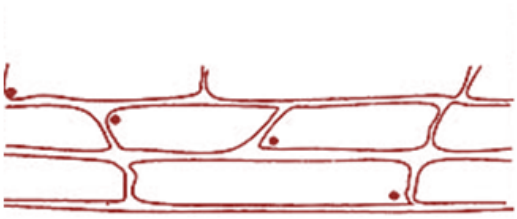
4. Name three unicellular organisms.

   Amoeba, Paramecium, Diatoms, Euglena, Chlamydomonas, Stentor, Volvox, etc.

5. What are ways unicellular organisms move?

   Cilia – hair like protrusions on the outside of a cell that sway back and forth
   Flagella – a tail like organelle that can whip back and forth or spin in a circle
   Extension of Cell Membrane – the cytoplasm will push out on the membrane, creating a "pseudopod" which is like an arm that reaches out and grabs things.
   Free Floating – A cell can simply allow its environment to move it

6. Make a sketch of plant cells and animals cells, such that your sketches show some of the differences that we observed with the microscope.



Plant

Animal

Your sketch should show organization and defined shape of plant cells. In contrast to that, the animal cells shape is undefined and disorganized.

7. What are some differences between plant and animal cells that we did not necessarily see with the microscopes?

Some differences, which we could not necessarily see, between plant and animal cells were:

- Plant cells have Chloroplasts, animal cells do not
- Plant cells have a Cell Wall, animal cells do not (might have been able to see)
- Plant has a large Central Vacuole, animal cells do not (could see vacuoles in plant, not animal)

8. What is Cellular Respiration? Where does it happen? Write the chemical equation (using words).

Cellular Respiration is the process by which cells release food energy. This process occurs in Mitochondria, in both plant and animal cells. The process can be described by the following equation:

Carbohydrates + Oxygen → Carbon Dioxide + Water + Energy

9. What is Photosynthesis? Where does it happen? Write the chemical equation (using words).

Photosynthesis is the process by which plants obtain energy from the sun. This process occurs in Chloroplasts, only in plant cells. The process can be described by the following equation:

Carbon Dioxide + Water + Sunlight → Oxygen + Carbohydrates

10. Summarize the steps of mitosis.

Mitosis can be summarized in the following six steps:

- The DNA starts to form into two sets of identical chromosomes on the inside of the nucleus
- The nuclear membrane starts to dissolve
- Parts, known as "spindles" attach to the chromosomes
- The chromosome pairs are pulled apart
- New nuclei start to form, all other parts from the cell are divided between the two halves
- The cell membrane pinches closed in the middle

11. What are the three levels of permeability?

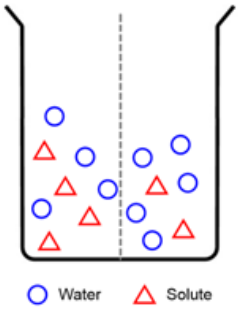
The three levels of permeability are:

- Permeable – all things are allowed to pass through
- Selectively Permeable – only some things are allowed to pass through, others are not
- Impermeable – nothing is allowed to pass through

12. What is the difference between diffusion and active transport?

Diffusion is the movement of a substance from an area of high concentration to an area of low concentration. It is a natural flow. Active Transport goes against the natural flow, using energy to create an area of high concentration. The cell does this by using Carrier Proteins, in the cell membrane, to pull a substance, which it needs in high concentration, into the cell.

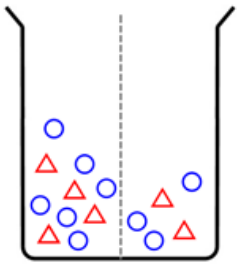
13. If the solution to the right has a membrane that is only permeable to water, show what it would look like in equilibrium.



Left Side:
4:4

Right Side:
5:2

Overall:
9:6
3:2



Left Side
3:2
6:4
Right Side:
3:2
3:2
Overall
3:2
9:6

14. List four facts about cancer.

Cancer Facts:

- Cancerous cells multiply uncontrollably and quickly
- Cancerous cells are damaged, they don't function as they are supposed to
- There is no current cure for cancer, although there are some techniques that show some promise
- Something that causes cancer is called a carcinogen
- Skin cancer is the most commonly diagnosed cancer in Canada
- Smoking is STRONGLY linked to lung cancer
- Chemotherapy is a chemical treatment that attempts to destroy cancerous cells

15. Name and explain a specialized cell.

There are several possible answers to this question.

Red Blood Cells – Animal cells that are specially shaped to help increase the surface area. This allows them to diffuse materials more quickly, so they may carry them through the blood stream (takes oxygen and food to cells, removes carbon dioxide).

Nerve Cells – Animal cells that have several tentacle like extensions that allow them to connect to other cells. Nerve cells send signals throughout the body.

Root Hair Cells – Plant cells located on the outer layer of the dermal tissue of plant roots. They have a long thin protrusion that is shaped to allow for faster osmosis, bringing water into the plants.

16. What is tissue? Name the different types of tissue in both animals and plants.

Tissue is a grouping of identical specialized cells.
There are four types of tissues found in animals:

- Connective Tissue - Support and connect parts of the body
- Epithelial Tissue - Protect and cover parts of the body (outside and inside)
- Muscle Tissue - Moves parts of the body
- Nervous Tissue - Carries signals between the brain and parts of the body

There are three types of tissues in plants

- Dermal Tissue - Protect the plant and prevent water loss
- Ground Tissue - Photosynthesis and nutrient storage
- Vascular Tissue - Transportation of materials

17. Name and explain an organ system.

There are several possible answers to this question.

Digestive System – An animal organ system that is used to intake and convert food into usable energy. This system involves the mouth, stomach, intestines and other organs. After the food is chewed and swallowed the muscles in the other organs expand and relax to move it further down the system, eventually being taken in by red blood cells and transported around the body.

Respiratory System – An animal organ system that is used to exchange oxygen and carbon dioxide. This system involves the mouth, trachea and lungs. When air is brought into the lungs it travels to small round sacs called alveoli. These parts have walls that are only one cell thick, allowing them to diffuse the oxygen through and into the red blood cells. The blood then takes the oxygen to the rest of the body. Similarly, the blood picks up carbon dioxide and transports it back to the alveoli to be expelled through the mouth and nose.

Circulatory System – An animal organ system that is used to push blood through the body so that it may transport necessary materials (food, oxygen) around the body. This system involves the heart and the blood vessels (veins, arteries, capillaries). The muscles in the heart rhythmically expand and relax to turn the heart into a pump that moves the blood in a "figure 8" around the body (from lungs to the heart, to the body to the heart back to the lungs).

18. Name one benefit and one potentially hazardous outcome of humans learning about cells.

As humans learn more about cells they become aware of the purpose and functions of cells. Many diseases cause damage on a cellular level, and by understanding cells we can try to counteract these diseases. Alternatively, as we try to help with combatting cellular issues, there is potential that we could manipulate a cell in such a way that it no longer functions properly. This could result in new diseases or damage to genetic information being passed through generations.

Cells End of Unit Test

If you did not get some of these answers, I will be posting this file online once all classes have taken up the review.

Your test will begin one week today. You will be given three periods to write the test. HOWEVER, **I will be marking page one of the test after the first day**. Extra break times will not be used to write the test, it needs to be completed in the allotted time. Be sure you know your cells vocabulary, as it will be required for question 1.

When you show up for the test, please be sure you have limited belongings with you, that you walk in quietly and arrive in class quickly.

I will be in during my regularly scheduled breaks, as well as some mornings before school. Start studying early, and come see me if you need assistance or clarification.

Please use any remaining time to study with a partner.

Please bring your review with you next period.